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CURRENT LITERATURE.

MINOR NOTICES.

THE TENTH PART of Wiesner's *Die Rohstoffe des Pflanzenreiches*[1] concludes the twenty-first section (641–684) on *Blüthen und Blüthentheile*, contains the twenty-second section (685–781) on *Samen*, and begins the twenty-third section on *Früchte*.—J. M. C.

"THE MOSSES OF ALASKA[2] is the title of the 29th paper from the Harriman Alaska Expedition, and J. Cardot and I. Theriot are the authors. Not only are the mosses collected by the Harriman Expedition of 1899 included, but also species previously reported from the region. The whole number enumerated is 280, of which 124 are new to Alaska, and 46 new to science. The 26 new species are distributed among the following genera: Cynodontium, Dicranum, Trichostomum (2), Barbula (4), Rhacomitrium, Ulota, Orthotrichum, Entosthodon, Webera, Bryum (8), Polytrichum, Brachythecium, Plagiothecium, and Hypnum (2).—J. M. C.

IN A STUDY of the conditions influencing the germination of the spores of *Agaricus campestris*, Miss Margaret C. Ferguson[3] has found "that if a few spores are able to germinate under the cultural conditions, or if a bit of the mycelium of *A. campestris* be introduced into the culture, the growth resulting will in either case cause or make possible the germination of nearly all the spores of the culture, provided, of course, that the other conditions are not such as to inhibit germination." Cultures in various substances and under different conditions showed much variation in germination but no very constant results. The article is accompanied by three plates, illustrating the growth of *A. campestris* and culture methods employed.—R. E. SMITH.

THE THIRTEENTH (1902) report of the Missouri Botanical Garden consists chiefly of a paper by Dr. Trelease, entitled "The Yucceae" (pp. 27–133, *pls. 100*). The four genera are *Hesperaloe*, with two species; *Hesperoyucca*, regarded as a monotypic genus; *Clistoyucca*, a subgenus of Engelmann's raised to generic rank and containing one species; *Yucca*, with twenty-eight species, six of which are new; and *Samuela*, a new genus comprising two species. Detailed synonymy, descriptions of numerous varieties, and full discussions of relationships are presented. The plates for the most part are reproductions of excellent photographs, showing habit and certain details; three plates are devoted to seeds, and twelve to geographic distribution.—J. M. C.

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[1] WIESNER, JULIUS, Die Rohstoffe des Pflanzenreiches, etc. Volume II, pp. 641–800. *figs. 200–248.* Leipzig: Wilhelm Engelmann. 1902. *M* 5.

[2] Proc. Wash. Acad. Sci. 4: 293–372. *pls. 13–23.* 1902.

[3] A preliminary study of the germination of the spores of *Agaricus campestris* and other basidiomycetous fungi. Bull. 16. Bureau Plant Industry, U. S. Dept. of Agric. pp. 43. *pls. 1–3.* 1902.

VERSCHAFFELT[4] has studied the occurrence of hydrocyanic acid in developing shoots of *Prunus Padus* and *P. Laurocerasus*, with the following results: As the buds open and the shoot develops, the HCN-compounds increase in amount as rapidly as do the other substances, so that the percentage amount of these compounds changes very little. It seems that these hydrocyanic bodies appear independently of light, and that they are not derived from the internode below the growing bud. In what form the hydrocyanic acid occurs is not yet determined. That maceration is necessary before complete distillation of the acid can occur would seem to indicate the presence of some compounds which can be split by an enzyme. The marked occurrence of benzaldehyde in the distillate from the developing buds makes it probable that glucosides related to amygdalin are present.—B. E. LIVINGSTON.

A RECENT BULLETIN of the U. S. Department of Agriculture, Bureau of Soils, contains three valuable papers by Briggs and Lapham[5] on soil physics. Following are some of the conclusions: (1) dissolved salts in general do not increase the capillary rise of soil waters; (2) concentrated solutions of all salts materially decrease capillary activity, but this effect is less marked with sodium carbonate than with natural salts; (3) the capillary rise of water in moist soil is much greater than in soil which was air-dry at the beginning of the experiment; thus for sea-island soil it was found that the maximum rise in dry soil was 37^{cm}, while the limiting value of capillary movement in moist soil was not less than 165^{cm}; (4) suspended clay may be advantageously separated from soil solutions by means of a porous clay filter tube and a compressing air pump, the solution being forced through the filter by increased air pressure.—B. E. LIVINGSTON.

A NEW SERIAL PUBLICATION has appeared, entitled *University of California Publications, Botany*, and intended to be a series of original papers in botany. Each volume will contain about 350 or 400 pages, and the subscription price is $3.50, the papers comprising those on general botany and West Coast botany. Professor W. A. Setchell is the editor of the series.

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[4] VERSCHAFFELT, E., On the prussic acid in the opening buds of Prunus. Koninkl. Akad. van Wetenoch. te Amsterdam. 31–41. (Je 25) 1902.

[5] BRIGGS, L. J. and LAPHAM, M. H., Capillary studies and filtration of clay from soil solutions. Bull. 19. Bureau of Soils, U. S. Dept. of Agric. 1902.

The first number is a paper by Harvey Monroe Hall,[6] entitled "A botanical survey of San Jacinto mountain". The general features of the mountain as to position, topography, soil, climate, and geology are given. This is followed by an account of the plant distribution, both on the basis of life zones and phytogeographic formations. The latter are presented as chaparral, forests, undergrowth, meadows, riparian formation, pond formation, and crest formation. The factors affecting plant distribution are discussed under the heads of altitude, temperature, moisture, slope exposure, desert winds, rock surface, avalanches, land slides, and water courses. The flora is said to be composed of distinct boreal and austral elements, with an admixture of certain Arizonan and New Mexican species. A catalogue of the species collected in or above the yellow pine belt includes 9 gymnosperms, 78 monocotyledons, and 365 dictotyledons. New species are described in Elymus, Stipa, Oxytheca, Potentilla (2), and Erigeron.—J. M. C.

F. HEYDRICH[7] has presented a novel theory as to the homology of the tetrasporangium in the Rhodophyceae. This structure he regards as the predecessor of the cystocarp and hence a true sporophyte. The idea is at least a suggestive one, but its establishment would require a far more careful and thorough investigation than the author apparently has made. He bases his work on Oltmann's studies, where it has been shown that the fertilized nucleus of the carpogonium passes out into the auxiliary cell and there by division gives rise to the spores. This nucleus, however, never undergoes a secondary fusion with the auxiliary nucleus. Heydrich finds that two cells are concerned with the production of the tetrasporangium. These cells arise from a pericentral cell of a branch, homologous with the cell and branch from which the procarp arises. The nucleus of the cell nearest the parent branch, the stalk cell, he considers as the fertile energid. This nucleus now divides, one daughter nucleus remaining in the stalk cell, the other passing to the distal cell, which is now the tetrasporangium mother cell. No nuclear fusion takes place, but instead the original nucleus breaks down, possibly contributing somewhat in the way of food to the immigrant. The spores all arise from the entering nucleus. This is a striking parallel with the behavior of the fertilized nucleus of the carpogonium as reported by Oltmann and others.

The examination embraces quite a wide range of forms, including representatives of both the zonate and tripartite types of division, in all of which these conditions are true. Lack of detail in the figures, brief treatment of many important stages, homologizing structures, in some cases on external appearance alone, together with dogmatic statements as to the kinship of nuclei when no mitotic figures are shown, fail to carry the conviction that this theory is to be regarded as firmly established on fact. However, it deserves investigation.—J. J. WOLFE.

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[6] Univ. Calif. Publ. Bot. **1**: 1–140. *pls. 1–14.* 1902.

[7] Das Tetrasporangium der Florideen ein Vorläufer der sexuellen Fortpflanzung. Bibliotheca Botanica 57.

THE MITOSES in the megaspore mother cell of several liliaceous forms, especially *Galtonia candicans*, *Scilla sibirica*, and *Tulipa Gesneriana*, are described in great detail in a paper by Schniewind-Thies.[8] In Galtonia the mother cell usually gives rise to a row of four potential megaspores, but occasionally only two cells appear in the row, one of which may germinate directly to form the embryo sac, a transition between the condition in Lilium, where the megaspore mother cell develops directly into the embryo sac, and the condition where one of four megaspores produces the sac. In any case, the first mitosis in the megaspore mother cell shows the reduced number of chromosomes. The second division in a form like Lilium corresponds in all essential details with the second division in a form which is to have two or four megaspores, and there is a similar correspondence in the third divisions. In Scilla it is interesting to note that while the number of chromosomes in the gametophyte is eight, the number in the sporophyte varies from eight to sixteen. In Tulipa, at the first mitosis in the mother cell, each of the daughter nuclei contains twelve chromosomes, and in the two succeeding mitoses this number is maintained at the micropylar end of the sac; but at the chalazal end the sporophyte number may appear at the second division, or the number may vary, fifteen, sixteen, and twenty-one having been counted. The writer believes that the new generation begins with the reduction division, both in the embryo sac mother cell and in the pollen mother cell, and he has no doubt that the processes in the ovule and in the microsporangium of angiosperms are homologous. The four potential megaspores correspond to the four microspores (pollen grains); cases of two potential megaspores show a step toward the further reduction which is found in forms like Lilium. The fact that the megaspores take the form of a row is due to position, there being no opportunity for early isolation and rounding off as in microsporangia.—CHARLES J. CHAMBERLAIN.

NOTES FOR STUDENTS.

FRANCIS E. LLOYD[9] has described vivipary in *Podocarpus Makoyi*. The embryo develops continuously, the hypocotyl passing out through the micropyle while the seed is still attached. The phenomenon is said to be well known in Japan, but does not seem to have been recorded in English.—J. M. C.

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[8] Die Reduction der Chromosomenzahl und die ihr folgenden Kerntheilungen in den Embryosackmutterzellen der Angiospermen. 8vo. pp. 34. *pls. 5.* Jena: Gustav Fischer. 1901.

[9] Rhodora **2**: 113–117. *figs. 3.* 1902.